Social participation and climate change

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Abstract   Social participation has been broadly analysed by comparing case studies of different types of socio-economic developments in Brazil and the United Kingdom (UK). A key objective has been to consider how effective social participation has been in incorporating society's points of view in the decision making process. In most cases, it would appear that very little can be done by stakeholders to change big decisions on development policies that support public and private development because in reality social participation often only provides an opportunity for discussion and agreement on specific issues regarding how development will be undertaken and how stakeholders will be affected. Although Brazil and the United Kingdom have socio-economic and cultural differences, it is necessary to emphasize that education, self-organization and knowledge of civil rights are crucial for an effective social participation process. As climate change is an important topic for present and future generations and that some of the development activities analysed in this study will emit greenhouse gases, this study also attempts to investigate if climate change mitigation strategies have been integrated into the social participation process. Investigation shows that there is little evidence that climate change mitigation actions involving stakeholders have been integrated into development strategies or have been part of social participation schemes in the case studies analysed. Having said that, the study also describes positive examples of climate change mitigation actions in different parts of the world that involve local people in 'carbon-neutral' or 'social-carbon' projects and proposes the creation of a *carbon-neutral committee* that would be responsible for coordinating climate change mitigation measures within development proposals such as the ones analysed in this study.

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1 Introduction

Although much has been discussed at mega environmental conferences such as Stockholm-72, Rio-92, the 92' Global Forum, and more recently Rio + 10 in Johannesburg in 2002, very little has been achieved with regard to what is required to achieve sustainable development in the long run. These events are clear manifestations of the government and civil society's participation in the process of sustainable development. However, the United Nations Environmental Programme's (UNEP) *Millenium Report on the Environment—Global Environmental Outlook (GEO 4)* (UNEP 2007) states that much still needs to be done to stop environmental destruction. A review of recent literature (Stern 2006; Altram 2008; Almeida 2008; Coelho et al. 2006; NRDC 2006; NAE—SECOM 2005; IPCC 2001) indicates that in the last few years climate change has become one of the main global issues highlighted by the international scientific community because it is considered by many as the major threat that will affect the quality of life of present and future generations and demands an urgent global response (see the *United Nations Climate Change Conference* held in Poznan, Poland in 2008) (UNFCCC 2008).

According to Braun (2006), sustainable development is a social concept because it emerged from society as a goal for a better world for present and future generations. The global warming problem is related to socio-economic activities at all societal levels. One of the main challenges is to encourage society to act collectively to protect the environment by reducing for instance greenhouse gasses and repair damage in the long term. Social participation is crucial in order to minimize greenhouse gas emissions in all development plans, programmes and projects whether initiated by multi-lateral agencies, government or the private sector.

A key question is how can effective social participation help to incorporate society's points of view in the decision making process and how could climate change mitigation measures be incorporated into the social participation strategies of development plans, programmes and projects in order to minimize global warming.

The main objective of this study is to conduct a broad indicative analysis of how social participation has been effective in the decision making process through the use of case studies of different types of socio-economic developments in Brazil and compare them with selected case studies in the United Kingdom (UK). Second, as climate change is one of the main concerns for long-term sustainability and because some of the development activities analysed in this study will emit greenhouse gases, this study also attempts to investigate if climate change mitigation strategies have been integrated into social participation schemes.

The case studies from Brazil are a governmental tourism development plan and a mining-industrial development plan. The case studies from the United Kingdom are a river basin management plan, a proposed dual carriageway (highway) and a Nuclear Power Plant Decommissioning Project. The case studies from a developed and a developing country provide baseline to analyse and compare social participation schemes under different cultural and socio-economic backgrounds and different institutional and government structures. The case studies are utilized as examples to see if social participation principles and methods, both theoretical and practical discussed throughout the paper, have been applied effectively in order to improve the decision making process.

The study also describes climate change mitigation actions that involve local people in 'carbon-neutral'[1] or 'social-carbon' projects. These projects exemplify how stakeholders can effectively be involved in greenhouse gas mitigation measures. Following this rationale, a social participation scheme is proposed that includes the creation of a *carbon-neutral committee* responsible for coordinating climate change mitigation measures within socio-economic development proposals. Last but not least are the conclusions and general recommendations of the study. As stated previously, this is an initial analysis that may lead to a more comprehensive study in the future.

2 Objectives of study

The present study utilizes two different approaches. The first approach is to analyse the efficacy of social participation in the decision-making process. The term 'efficacy of social participation' in this paper is defined as the ability to achieve goals set by stakeholders within the decision making process of development proposals. This delimitation is stressed because the term 'social participation' has been used in many different ways at different levels of decision making in development projects, plans and programmes. Despite the fact that it has been extensively used there has been little feedback on how effective this process has been in utilizing stakeholder's opinions and recommendations in the decision making process (Cleaver 2001).

As greenhouse gasses represent one of the major challenges for present and future generations, and socio-economic developments generate greenhouse gasses that contribute to climate change, it is considered essential that climate change mitigation measures should be part of social participation schemes within development plans, programmes and projects. The second approach therefore adapted in the present study is to consider if climate change mitigation measures involving local stakeholders have not only been discussed in social participation studies, but been used to involve local populations in reducing greenhouse gas emissions.

3 Methodological approach

In general terms, the study utilizes knowledge from different areas of research because social participation and environmental matters are inter and trans-disciplinary. This study is based on a *real-world* situation (Kitchin and Tate 2000) where 'social participation' is a term used to indicate that stakeholders are (or have been) directly or indirectly involved, or are (or have been) impacted by development.

The case studies in Brazil are the *Sustainable Tourism Development Plans (PDITS)* developed under the guidance of specific terms of reference put forward by the Inter-American Development Bank (IDB). The plans cover large areas of different states as part of the *Tourism Development Programme in the North-eastern Region of Brazil (PRODETUR NE II)* (MTUR 2005). The second case study focuses on the public hearings and social participation events in the *Strategic Environmental Assessments (SEA) of the Pantanal—Mining-Industrial Development Plan and Influences on The Panatanal Flatland (AAE do Pantanal)* in the centre-west region of Brazil (LIMA/COPPE 2008; Farias

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[1] Carbon-neutral in this paper refers to all climate-friendly actions to minimize greenhouse gases (NRDF 2006).

2008). The third case study is the *Fishing Activity Compensation Plan* (*Plano de Compensação Pesqueira*) developed by the Seismic Company CGC Veritas on the Brazilian coastline (HABTEC/CGG, nd). The UK case studies are the *Aberdeen Western Peripheral Route (AWPR)* a 46-km dual carriageway proposed by Transport Scotland (Scottish Government) that conducted a public enquiry as part of the EIA process (Transport of Scotland 2008a, b), the *Ythan Catchment Project* in the northeast of Scotland, developed to improve catchment management based on increased public involvement (Morris and Morris 2005), and a the *Trawsfynydd Nuclear Power Plant Decommissioning Project* in the north of Wales that involved stakeholders in the Environmental Impact Assessment (EIA) (Bond et al. 2004).

Research was conducted utilizing secondary data (mainly qualitative) and overview of social participation case studies.[2] The selection of case studies followed specific criteria such as social and economic relevance of government (or private enterprise) developments, regional and local case studies involving a great number of stakeholders, diversity of subject area (e.g. tourism development, transport development, mining-industrial pole, nuclear power plant), and different planning and development approaches. This enabled a general analysis of how the social participation process operates at different scales and in different locations, and provides comparative examples regarding social participation and climate change matters.

A series of interviews were developed in Brazil[3] and in the United Kingdom[4] in different periods of time in order to not only help select case studies but also to investigate the effectiveness of the social participation process. Interviews in Brazil were carried out with stakeholders affected by the governmental tourism development plan *(PRODETUR NE II)*, including interviews with the coordinator of the strategic environmental assessment (SEA) projects of the Mining-Industrial Plan and the responsible person for the social participation process of the *Fishing Activity Compensation Plan*. Interviews in the United Kingdom were developed with stakeholders *(Road Sense Committee)* related to the *Aberdeen West Peripheral Route (AWPR) Project*, and with researchers involved in the *Ythan Catchment*

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[2] A number of social participation case studies have been previously reviewed before selecting the ones in the present study. In Brazil, the projects previously reviewed are the following: agriculture development scheme, a local coastal tourism project and a chemical plant participatory scheme. In the United Kingdom, the projects reviewed are the following: a waste management facility and a neighbourhood development project. These case studies were small-scale projects that involved few stakeholders in social participation schemes.

[3] *Tourism Development Program (PPRODETUR NE II)*: interviews were carried out in June 2006 with stakeholders (NGOs, local associations and governmental institutions) in the coastal area of the States of Ceará, Maranhão and Piaui in Brazil. The interviews aimed to diagnose the efficacy of social participation and the decision-making process of PRODETUR NE II. *Mining Industrial Plan*: The coordinator and responsible person for the social participation process of the SEA of Pantanal were interviewed in September 2008 at the Federal University of Rio de Janeiro (UFRJ). The interview focused on how, when and where social participation schemes were developed and how effective they were to change plan design. *Fishing Activity Compensation Plan*: the interview was carried out in October 2008 at HABTEC Environmental Engineering headquarters in Rio de Janeiro regarding the effectiveness of social participation in re-designing the original compensation plan.

[4] *Aberdeen West Peripheral Route (AWPR)*: Interviews were carried out with representatives of the Road Sense Committee in November 2008 during a public enquiry at the Hilton Treetops Hotel in Aberdeen. The interview focused on how effective social participation schemes were to influence the decision-making process. An interview was also carried out with the Chairperson of the Road Sense Committee at the University of Aberdeen in March 2009. *Ythan Project*: Between October and November 2008 several informal conversation interviews were developed with researchers from the University of Aberdeen about the efficacy of the social participation process of the Ythan Project.

Project. No interviews were carried out with stakeholders related to the Trawsfynydd Nuclear Power Plant because the public consultation process was undertaken in 1990s.

3.1 Methodological steps

The methodology utilizes the following stages:

- Literature review of social participation and consideration of possible case studies.
- Analysis of social participation in case studies from Brazil and the United Kingdom (UK).
- Analysis as to whether climate change issues have been integrated in social participation in the case studies.
- Development of a carbon-neutral social participation scheme (model) that addresses climate change Issues.
- Conclusions and recommendations as to how to improve social participation strategies.

4 Social participation in the decision making process

Social participation in the decision making process of governments was one of the main proposals of the Rio Declaration and Agenda 21, which emphasized the need not only to disseminate information to different levels of society but also to encourage participation of society in the decision making process. The *Aarhus Convention* adopted in 1998 by the United Nations Economic Commission for Europe (UNECE) during the Fourth Ministerial Conference in the 'Environment for Europe' formally granted the right of access to information, social participation in decision-making and access to justice in environmental matters. The Convention stated that sustainable development can only be achieved through the involvement of all stakeholders.

It can be argued that one key feature of sustainable development is that it should be a *collective response based on individual commitments to contribute to this process at the local level*. This introduces a major challenge in implementing sustainable development locally. New ethical values directly linked to a societal education process of learning, and accepting new paradigms that will help change old development patterns rooted in the mainstream thinking, must be key to make progress. This implies a modified approach in the way society uses environmental resources for present and future generations (Braun 2009).

Social participation is a fundamental part of the sustainable development process as emphasized at the Rio 92 and Johannesburg 2002 Conferences. Sustainable development is a social paradigm, and it is from society that changes towards greater sustainability will be accomplished. The sustainable development process involves people and groups of people that have basic needs for a better quality of life. According to Pretty et al. (1997), the complexities of real-world problems need solutions developed by all stakeholders. Braun (2006, 2009) argues that sustainable development is a collective response based on individual commitments to contribute to this process at the local level. The participation of stakeholders' in social participation schemes provides the opportunity for people to express their opinions and feel part of the planning process. It is important to stress that everyone has an important role to play in helping to protect the environment and improve measures to combat climate change. This is called by some authors *empowerment*, and is defended by the International Council for Local Environmental Initiatives (ICLEI) in their Agenda 21 implementation methodology (Kranz 1999; Dalal-Clayton and Bass 2002). In this

Box 1 Groups of stakeholders at different levels and sectors

Power–public order	Citizens–civil order
Governments and international agencies	Residents
Federal, state and municipal governments	Entities (non-profit organizations, cultural groups, environmental groups, political parties, others)
Capital–economic order	Planners–technical order
Public organizations	Liberal professionals (private sector)
Private agents: land owners; private entrepreneurs; investors	Civil servants (public sector)
	Researchers/university professors

context, stakeholders' can be related to different levels and sectors of society and classified in four groups (see Box 1).

Box 1 provides a general view of how stakeholders can be grouped into different classes. However, categorizing into groups leads to the risk of excluding some groups from the planning-management process. Kranz (1999) argues that the list of stakeholders' has to be open to all participants including 'indigenous groups' 'spiritual' (and religious) groups and, especially in developing countries, women's groups (UNEP 1997). Gardner and Stern (2002) put forward that developing community management programmes, changing values and changing the information available and providing incentive schemes for individuals and municipalities are necessary tools for improving environmental issues. This requires behavioural solutions that involve sociological, anthropological and psychological aspects of human relation development. Although involving the local community is clearly a fundamental issue, there is the crucial question of how NGOs interact with local communities because of limitations in participatory tools and methodologies and risk of disrupting cultural patterns. There are controversies about the real agenda of developers such as multi-lateral agencies promulgating social participation events as a tyrannical imposed process regardless of cultural context (Hailet 2001). In many cases, it has been used only as a means for the government (or private initiatives) to conduct dialogue with stakeholders regarding how development will be undertaken and how they will be affected. Many times social participation tends to have little or no influence on decision-making as it does not involve a wide range of stakeholders affected by the development process, but is designed to confirm established decisions (Blackstock et al. (nd). According to Franca 1998), participation has to be conducted in a democratic manner because in South American countries it is considered a right 'conquered' by the population after all the past dictatorial governments. According to Cleaver (2001), there are significant claims for social participation schemes, but there is little evidence as to long-term effectiveness of participation improving the conditions of the most vulnerable people, or as a strategy for social change.

Social participation is normally considered as being concerned with the advantages of discussing the democratic interests of society, but it is necessary to identify groups of stakeholders and proposals that can contribute positively to the social participation process.[5] Many also argue that very controversial groups that cause conflict and disruptions in the social participation process should be excluded. There are three issues that are fundamental to consider: the maturity of civil society, education and political culture; the attitude of

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[5] The term 'social participation process' in this paper is used as the development of actions that involves stakeholders through discussions via participatory planning meetings, public enquiries, seminars, forums and e-forums, in order to reach consensus for decision making.

developers and government authorities towards social participation; and the availability of human and economic resources to allow effective participation (Bond et al. 2004).

Direct consultations with poor people in developing countries have revealed that vulnerability, physical and social isolation, insecurity, lack of self-respect, lack of access to information, a distrust of state institutions and powerlessness are barriers to effective participation (World Bank 2005). According to Allen and Kilvington (2002), some groups can become highly effective and develop and diversify their activities to better support the wider aims of sustainability, while others will cease after completing a specific task. It is emphasized that cultural and behavioural aspects should be taken into account (Gardner and Stern 2002), and whenever possible the views of the most vulnerable groups should be heard through local participatory schemes such as public forums, interviews with stakeholders and community based events.

The output from democratic public forums and participatory schemes is directly related to stakeholder's knowledge, understanding and culture. The main advantage of social participation is that the planned actions, based on reaching planning consensus, may avoid further conflict regarding key issues (Bell and Morse 2003). However, 'participation' and 'consensus' may not always be the best path to follow, because mistakes can arise even from groups of stakeholders that are well informed about development proposals (Braun 2009). Many times the role of stakeholders in the decision-making process is unclear because there is little or no feedback after public consultation as to whether their recommendations were taken into account in the execution of development plans (Ng 2002). Pretty and Hine (1999) argue that there has also been a dilemma regarding social participation in the decision making process because on the one hand government authorities need people's participation but on the other hand they fear that wider involvement can be ineffective in decision making because of too many opinions, recommendations and conflicts.

Encouraging all stakeholders', e.g. institutions, associations, the government, the academic sector, the private sector, civil society, the church and the population, to become engaged and motivated to work to achieve sustainable development goals can be considered an ideal situation. According to OECD (2006), effective engagement of stakeholders' depends to a great extent on their understanding and acceptance of getting involved in strategies, but this will require changes in attitudes, behaviour and institutional structures. However, in order to motivate people to participate in sustainable activities it is necessary to develop instruments that will stimulate and increase consciousness, education, enthusiasm, dedication, co-operation and productivity.

According to the United Nations (UN), public consultation should guarantee that stakeholders have knowledge of government development plans and programmes, as well as the impact caused by such development. This is done in order to better support planning and decision making by government organizations (World Bank 1999). According to Blackstock (2007), it is necessary to take into account that planners are in general following rules set by policy makers and often are relatively powerless to resolve problems related to decisions made in early planning stages. Blackstock (2007) emphasizes that stakeholders should engage and question the policy makers who set up development strategies for plans, programmes and projects. Involvement of stakeholders in the early stages of planning has many advantages if they are involved (Bond et al. 2004). It is also necessary to research on behaviour change (Gardner and Stern 2002) and to provide regular feed-back in order to keep stakeholders interested in the development process. This will lead to improved decision-making because there is a great difference when a 'plan' is elaborated by an independent team and when it is elaborated in a participatory manner. In

the latter case, the process is more transparent, communication is open with stakeholders' and problems can be discussed through direct participation. The planning process contained in the World Bank guidelines (World Bank 1999) highlights establishing the institutional linkages between different actors in a study area, followed by appropriate public consultation. According to the United Nations (UN), public consultation should guarantee that stakeholders have knowledge of government development plans and programmes, as well as environmental impacts that may be caused by such development. This will better support planning and decision making by government organizations (World Bank 1999).

According to Blackstock et al. (nd), much of the literature focuses on how to develop successful participation processes, rather than evaluating how the process of participation may be contributing to desired outcomes. Ng (2002) emphasizes that there are some limitations to stakeholder self-mobilization initiatives. These range from overlapping between groups, conflicts, power struggles and change in representatives. Pretty and Hine (1999) also considers that participation may threaten rather than support the goals of community development.

4.1 Different tools for social participation

According to Pretty and Hine (1999) and Dalal-Clayton and Bass (2002) since the late 1980s, there has been a full range of different approaches and methods of community involvement and participatory planning in the decision making process They range from grass-roots Agenda 21 (AG21) public forums to formal government public enquiries of development plans, programmes and projects (Dalal-Clayton and Bass 2002; Bond et al. 2004; Pretty and Hine 1999, Braun 2009). Some of these methods are the *tree and land tenure-rapid appraisal, rapid participatory diagnoses, participatory rural appraisal, institutional analysis for development framework, holistic management; environmental dispute resolution; cooperative ecosystem management; Integrated system for knowledge management; rapid appraisal of agricultural knowledge systems; communicative planning; asset mapping; community sustainability audit, integrated systems for knowledge management (ISKM), participatory budgeting, agenda 21 local forums,* word mapping, *Venn diagram, ZOPP objectives-oriented project planning, participatory learning* and *action learning* combining visual and verbal techniques (*open-ended interviews, discussion groups, information sharing*), among others (Estrella 2000; Flora et al. 2000; Pfeiffer 2000, Freudenberger 1994; Alencar 1994; World Bank 2005; Kranz 1999, GTZ 1997). The World Bank has developed various tools such as *Participatory Rural Appraisal (PRA), Beneficiary Assessment* and *Social Analysis* (Francis 2001) and *Participatory Poverty Assessments (PPAs)* that have been applied in more than sixty countries in order to allow policymakers to consult the poor directly and transmit findings to policymakers (World Bank 2005).

One of the major instruments in the Rio Declaration was that the environmental assessment of development plans, programmes and projects should be conducted (Clark 1999). Several environmental assessment typologies such as *environmental impact assessment (EIA), social impact assessment (SIA), strategic environmental assessment (SEA)* and most recently *Sustainability Appraisal (SA)* of regional spatial strategies (ODPM 2005; Partidário; 1998) have incorporated social participation schemes to improve the decision-making process by involving stakeholders at some stage of the process. The European Union issued several directives to ensure that social participation is part of

Box 2 Classification of the different types of social participation

Self-mobilization (people mobilize themselves and initiate actions without involvement of any external agency, although the latter can provide an enabling framework)

Interactive (people are involved in analysis and development of action plans and decision-making)

Consultative (people answer questions related to sustainable development issues by external agents)

Functional (social participation events but usually after decisions have already been made)

Passive (people are informed about the decisions with no ability to change them)

Material incentives (people participate to get a bonus. e.g. food, money, etc.

Manipulative (a few local representatives participate but are outnumbered and outvoted by external agents)

Adapted from Pretty and Hine (1999); Pretty et al. 1997)

environmental assessment procedures[6] (Ng 2002). This has improved the decision-making process at 'higher' levels of decision making (Fischer 2007; OECD 2006; Aschemann 2002; McDaniels et al. 1999). Based on the EC Directives, the United Kingdom (e.g. Scotland, Northern Ireland, England and Wales) has issued specific directives for social participation, providing an opportunity for the public to submit their comments (Bond et al. 2004).

Social participation as part of the environmental assessment process has increasingly been applied in developing countries (World Bank 1999; Fischer 2007; OECD 2006; Dalal-Clayton and Bass 2002; Bond et al. 2004). In Brazil, the definitive step in structuring the rules of the EIA process came with Resolution No. 001/86 in 1986 from the *National Environment Council (CONAMA)* (CONAMA 1986) and later Resolution No. 237/97 (CONAMA 1997) that defined responsibilities and procedural specifications, that included public enquiries involving stakeholders (Franca 1998; Moreira 1994). Growing pressure from civil society and environmental organizations to involve local stakeholders in the decision-making process has induced financial agencies such as the World Bank (WB) and the Interamerican Development Bank (IDB) to include social participation in the terms of reference for developments financed by these agencies. In recent years, social participation has been part of the process of formulating development plans and programmes either financed by the government with support from the WB and IDB, or by government and private multinational initiatives (LIMA/COPPE 2008; MTUR 2005; Dalal-Clayton and Bass 2002).

In general terms, there is a common theme within social participation approaches such as a need to identify problems or conflicts in a certain area, create awareness, motivate stakeholders and set strategies and actions to solve them in a participatory manner. Social participation in several countries has provided experience that distinguishes between good and bad participation processes. Box 2 exemplifies some different types.

According to Pretty and Hine (1999; Pretty et al. 1997, the aforementioned list provides examples of the most effective type of participation (e.g. *self-mobilization*) and the less effective (e.g. *manipulative* type). There is also a term called 'instrumental participation'[7] that is used by government and multilateral financing agencies and some government sectors, which consists of associating participation with project implementation but stakeholders' do not effectively participate because participatory planning approaches are not taken into consideration. This form of participation resembles the

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[6] The EEC Directive 85/337 and the European Union (EU) Directive 97/11/EC on EIA, the EU Strategic Environmental Assessment Directive (2001/42/EEC) and the Directive 2003/35/EC on social participation.

[7] This type of participation resembles the '*functional*' participation as described in Box 2.

Box 3 Basic principles for effective social participation

Start the social participation process early when alternatives for development are still in the initial stage of planning; identify all stakeholder groups that are linked to the plan, programme or project and identify key issues where consultation will be needed and determine the level and methods of consultation, creating a favourable social environment for development

Integrate stakeholders in all planning and development stages; inclusion will not make planning more expensive; develop an interactive process with a wide range of stakeholders for better understanding and planning; involve stakeholders in problems and possible solutions

Dialogue between developers and stakeholders should be an ongoing process and not after decisions have been made; create awareness for better development

Information through a transparent communication flow allowing stakeholders to have as much access to information as possible; allow for systematic learning that encourages ongoing learning and adaptation

Empowerment of stakeholders by providing real opportunities to influence decision-making through forums, public enquiries and hearings and participatory planning

Use *Moderation* and *Mediation* to help avoid conflicts and facilitate discussions and planning with stakeholders

Monitor participatory schemes by the community and developers to evaluate developments and take action to improve the situation

Adapted from Gardner and Stern (2002), Bond et al. (2004), Flora et al. (2002), Blackstock et al. (nd), Kranz (1999), Ng (2002), OECD (2006), World Bank (1999)

'functional participation' described in Box 2. Social participation may also be developed based on regulatory guidance from government and environmental organizations (Blackstock et al., nd) now being mandatory in the EIA process and the implementation of conservation areas.

Effective social participation has to do with empowering local stakeholders and leadership among the community. According to Morris and Morris (2005), the success of local participation depends on the personalities and authority of those involved. If individuals are willing and enabled to take the challenge of working in partnership, it is possible to achieve more with the local people. Motivation of local stakeholders has been one the topics proposed for local sustainability (Braun 2009). However, achieving consensus among stakeholders can be more difficult than among organizations (Morris and Morris 2005). This is due to the fact that organizations in general meet and interact regularly, while stakeholders in many cases have never met and worked together collectively before.

Box 3 summarizes some basic principles for an effective social participation process as elaborated by various authors.

The aforementioned principles are fundamental for effective participation. However, it is also important to consider that the social participation process can in many instances be 'institutionalized' through a stakeholder's committee (or association) and recognized by the government through specific regulations because this will legally enforce the social participation process. Additionally, it is also important to consider that stakeholders and developers should screen the proposals that arise from participatory events, public enquiries and local consultation in order to select those that will effectively improve the participation process. Controversial groups and proposals that cause conflict, disrupt the participatory process and go against consensus should be avoided because it will be time consuming and will not be helpful for the decision-making process. Gardner and Stern (2002) highlight the need to establish rules to regulate and manage local community interests on environmental topics in order to reach consensus and avoid misuse of common resources.

4.2 Social participation and carbon neutrality

Results of studies by international organizations and governments (Stern 2006; Altram 2008, C; NAE—SECOM 2005; Mai et al. 2006; Coelho et al. 2006) show that climate change affects the whole world. The causes of global warming are related to socio-economic activities and there are many projects designed to help minimize the foot-print of greenhouse gas emissions. It is therefore desirable to involve stakeholders in all levels of society (see Box 1) in order to try to reduce global warming and repair damage in the long term through social participation in development plans, programmes and projects.

Stakeholders should not only know about the potential impacts generated by development and how they might be affected, but also how development will contribute to climate change and how they could help minimize the causes of global warming through local projects supported by the government and developers. This can be achieved either by top-level government policies and programmes or by simple actions at the local level. It is crucial to develop an effective participatory scheme that involves stakeholders at all levels of society so they can co-operate with sustainable actions to help minimize climate change.

The term *social carbon* has been used to indicate social participation in projects to reduce carbon emissions. The main objectives for social carbon are preservation of bio-diversity and natural resources, carbon sequestration and conservation and environmental education (Coelho et al. 2006). One such project has been developed in the Amazon region by the Amazon Environmental Research Institute (IPAM) and the Climate Observatory (OC) The social carbon project involved the local community in a carbon sequestration project through forestry, agroforestry and renewable sources of energy (Coelho et al. 2006).

The *Climate Neutral Network (CNNet)* developed by the United Nations Environmental Programme (UNEP 2008) has been another global initiative to encourage reductions in greenhouse gas emissions and support for international agreements such as the Kyoto Protocol, the Montreal Protocol and the Millennium Development Goals (UNEP 2007). The CNN network works as a public forum to discuss carbon neutrality and to assist partners interested in reducing greenhouse gas emissions. This has been done through networking via a web forum. There are a wide variety of projects in the CNNet in which associated organizations and companies, cities and countries can participate. One such social participation carbon reduction project is *You Sol—Incentive Sol Solidarity Solutions* located in São Paulo, Brazil. According to Gola (2008), the aim of the organization is to develop an online community web portal and network to motivate people to fund sustainable activities and products, and encourage members to become carbon-neutral. The consumers receive *carbon points* and *bonus points* every time they buy products and encourage other consumers to do the same. The idea behind this is to educate people to make better choices in their shopping and give preference to products that generate less negative environmental impacts and thus become more conscious about climate change. The portal allows registered suppliers to market their products and services to consumers, creating a worldwide solidarity sustainable consumption community in order to achieve carbon-neutral consumption.

Other projects of the CNN net involving local societies are the *Carbon Association Australasia (CAA), the Green Cabs* and the *Footprint Adventures*. The CAA project is a non-profit organization actively promoting international standards for greenhouse gas reduction involving governments, foundations, NGOs and individuals mostly in Asia and the Pacific. The aim is to make a difference through their efforts to reduce carbon dioxide and greenhouse gas emissions and to encourage others to address climate change (Ryan

Box 4 Local-based climate-friendly actions

Support *carbon sequestration projects*

Consume less products that depends on long-distance transport

Avoid consumption of red meat produced in environmentally sensitive regions such as the Amazonia

Install *solar systems* to heat water and/or to produce electric energy

Avoid overheating homes in cold regions and excess of air condition in warm climates

Use *public transport*, *bicycle* or *walk more*

Read from the computer and *print less* texts

Use electric appliance that are *energy efficient* and energy saving lamps

Use *rechargeable batteries* powered by solar gadgets

Recycle plastic, paper, metal and glass

Avoid excess of *plastic bags* and use the ones made of natural materials

Other actions

Adapted from NRDC (2006), World Bank (1999), Zero Hora (2005)

2008). The *Green Cabs* is an environmentally friendly taxi company in New Zealand that supports a non-profit organization that focuses on agro-forestry, with programmes in 30 developing countries to reduce CO_2 emissions through partnership with an NGO called *Trees for the Future.* The project has provided carbon credit programme and financially supported villagers in developing countries, as well as providing access to produce that can be used for food, shelter and medicine, the recovery of natural native vegetation, regeneration of habitats for native flora and fauna and re-establishing underground aquifers (Brown 2008). The *Footprint Adventures* develops guided journeys to festivals and events across New Zealand with a focus on public awareness regarding the impact of eco-tourism and adventures on the environment (Thomas 2008).

Other participatory carbon-neutral projects are through network campaigns on the internet that link thousands of people. This has been the case of an NGO called Avaaz that created a new global web movement on human rights and environmental issues with a group of more than three hundred thousand people from all over the world (Aavaz, nd). One major strategy of Avaaz is the *carbon reduction project in Europe*. The main objective is to gather thousands of signatures for a petition to make decision-makers from several European countries implement policies to reduce carbon emissions. The Avaaz NGO has also created the 'Fossil Prize' that has been given to those countries that have done little to negotiate and implement carbon reduction strategies.

There are also cases in which stakeholders have mobilized in order to protest against developments that impact climate change such as the case of Heathrow's Airport proposed Third Runway (BBC 2007). This movement in the past 3 years has recruited thousands of protesters such as local residents, environmental groups and NGOs against Heathrow's expansion project, not only because of greenhouse gas emissions, but also because of loss of homes, noise and air pollution.

Local actions developed by individuals can help minimize the causes of global warming. Box 4 exemplifies some examples of climate-friendly actions.

In general, the aforementioned examples demonstrate that climate change mitigation measures and social participation can be brought together as part of government socio-economic development initiatives for a more sustainable environment. As has been shown, there are several ways in which local stakeholders at different levels of society (see Box 1) can take part in climate change mitigation measures.

5 The analysis of case studies

Case studies from Brazil and the United Kingdom were analysed to see how effective social participation schemes have been to improve the decision making process. This section also analyses if climate change mitigation measures involving stakeholders have been integrated in the social participation process.

5.1 Brief description of selected case studies

Each case study has been analysed in three stages. First, a general description is given of the project and its location. Second, a brief description of the methods of social participation is developed and third a brief description of the relation between the development activities and climate change is presented. For the case studies in Brazil, the information was gathered using a combination of documentation review, site visits and interviews with stakeholders, including informal interviews with key persons linked to the case studies (see item 3 Methodology). The case studies in the United Kingdom were analysed through documentation review and informal interviews with a limited group of academics and local stakeholder groups. Observations were made during a public hearing of the proposed *Aberdeen Western Peripheral Route (AWPR)* in Scotland in November 2008.

5.2 Description of case studies in Brazil

5.2.1 Sustainable development tourism plans (PDIT) of Sergipe State

This case study is part of the *Tourism Development Programme in the North-eastern Region of Brazil (PRODETUR NE II)* developed by the Ministry of Tourism (MTUR). The programme is part of a cooperation agreement between the Brazilian Government and the Inter-American Development Bank (IDB) as part of the National Tourism Plan (MTUR 2005). Based on PRODETUR directives, several Brazilian States located in the north-eastern coastal zone of Brazil developed *Sustainable Development Tourism Plans (PDIT)* elaborated by consultancy firms based on specific terms of reference (TOR) issued by IDB and MTUR. The main aim of the PDITS is to plan infrastructure developments such as sanitation, water treatment, and solid residues management, construction and improvement of roads and airports, restoration of historical sites and monuments and environmental preservation, including institutional development of public and private organizations and training public servants. The area of the plan is seen in Map 1.

Social participation was recommended through a specific directive called Operational Regulation (ROP) as part of an integrated process during the elaboration of PDITS. The social participation process during the elaboration of the PRODETUR/PDITS from the States of Maranhao, Piaui, Ceara, Rio Grande do Norte, Alagoas and Sergipe has been analysed by Braun (2005a, b, c, d). This has provided a good background to analyse the efficacy of social participation in the tourism development process.

One plan (PDITS of Polo dos Coqueiros, State of Sergipe) has been selected for analysis because it encapsulates the pattern of social participation of all PDITS analysed previously (see Braun 2005a, b, c, d).

The ROP guideline established three basic phases for the social participation process during the elaboration of the PDITS of Sergipe State. The first phase was developed through several public meetings with stakeholders (e.g. public and private institutions, NGOs, local associations and municipalities, in order to diagnose problems and potential developments. A second group of meetings focused on strategies for the PDIT, and a third phase validated the plan through a meeting involving stakeholders and the State Tourism Council.

According to Braun (2005d), analysis of the proposal demonstrated that not all phases recommended by ROP were conducted. The stakeholders involved were basically the government and the private sector. Very few NGOs participated in the meetings. There was also no documentation of the meetings available. The analysis demonstrated that the social participation process did not achieve the ROP's objective of achieving an ongoing consultation process with relevant stakeholders linked to the tourism sector as recommended by the ROP.

In general terms, tourism development worldwide can contribute to negative climate change impacts through emission of greenhouse gases from intensive transport and consumption of energy, and the provision of goods and services. According to Braun (2005d), there was no evidence of any discussions regarding climate change during public enquiries as part on the PDIT development. The PDIT plan also did not make any reference to greenhouse gas abatement strategies that would involve local stakeholders as part of the environmental mitigation measures that were emphasized in the Plan.

5.2.2 Strategic environmental assessment of Pantanal: mining-industrial pole development plan

The strategic environmental assessment (SEA) of Pantanal was undertaken because several large mining companies, including the Brazilian *Companhia Vale do Rio Doce (CVRD)* and the multinational Rio Tinto *(Mineração Corumbaense Reunida (MCR)* are planning to explore the third largest deposit of iron and manganese in Brazil. The area of influence of the plan is located in the Alto Paraguai river basin in the Pantanal flat land as seen in Map 2. The Pantanal region also has calcareous rock that is being exploited by a large company called Grupo Votorantin (LIMA/COPPE 2008). Mining production in the region is over 8 million tons/per year. There is also an iron smelting plant installed by MCR at the Industrial Pole of Corumba which will produce 900 thousand tons/year. Several companies are eager to develop mining industries in this area. The industries will be partially powered by Bolivian gas and a thermo plant *UTE Corumba (Termopantanal).* There is also a plan to implant a Gas-Chemical Pole for several large companies such as the Brazilian Oil Company (Petrobras) which enterprises from Brazil, Spain and Bolivia would install. This pole will produce basic chemicals for fertilizers, different types of gas and related components. (LIMA/COPPE 2008). The SEA of Pantanal was undertaken not only to evaluate

strategic impacts in the region but also to identify opportunities to protect the environment and establish future scenarios due to mining-industrial developments. The SEA was undertaken by the companies that are part of the mining-industrial pole.

According to (LIMA/COPPE 2008; Farias 2008), a survey of stakeholders was undertaken as part of the SEA exercise in order to understand complexities, identify partners and social conflicts related to the proposed mining-industrial plan (see interview in item 3 Methodology). The survey included the development of an internet 'e-dialogue forum'[8] (*plataforma de dialogo*) to encourage interaction between the NGOs[9] and the private sector. The main objective of the forum was to discuss and establish consensus on controversial topics related to the conservation and development of the Pantanal region. Several interviews and local consultations with stakeholders were also undertaken by the SEA team to complement activities in the *dialogue forum*. Based on the studies by LIMA/ COPPE (2008) and Farias (2008), the NGOs were very concerned as to the impacts that the mining-industrial pole would cause in the region and particularly on the Paraguay River. Based on local consultations and the *dialogue forum* outputs, the SEA team incorporated in the final document a list of not only the main problems identified by stakeholders (e.g. air and water pollution, disorganized migration from other parts of Brazil and Bolivia, deforestations) but also the main positive expectations regarding the development of the plan (e.g. employment, income and economic development).

Social participation events were also promoted as part of the SEA exercise in which several stakeholders of the *dialogue forum* (e.g. government organizations, and private firms) participated. The events were to validate SEA development strategies and to inform

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[8] According to interview developed with the coordinator of the SEA team (see interview in item 3 Methodology), the dialogue Forum was specifically created to support the SEA study. The *e-forum* had two different discussion lists with approximately 150 stakeholders discussing the proposed mining-industrial pole. The *e-forum* issued 48 electronic bulletins and over 11,000 emails were exchanged among stakeholders (Farias, 2008).

[9] NGOs such as WWF-Brasil, AVINA Foundation, Conservation International, Boticatio Foundation. Ecotopric Foundation, among others, is working in the region to preserve the biodiversity of the Pantanal region, develop socio-cultural values and advise on environmental management issues.

all interested parties about potential developments. Although the *dialogue forum* was seen as an opportunity for dissemination of information and debate between stakeholders, certain NGOs criticized the event as a *bureaucratic forum* set up just to provide technical information on the SEA development and that technical information could not be understood by the local population. Nevertheless, while the first step to involve stakeholders in the SEA process was accomplished, no follow-up information was available to see if opinions and recommendations were incorporated in the final plan for the mining-industrial pole.

According to the documentation of the SEA (LIMA/COPPE 2008), the mining-industrial pole will generate greenhouse gases such as carbon monoxide as well as pollutants as part of normal operations. There has been a recommendation for air pollution control based on specific resolutions from the Brazilian National Environmental Council (CONAMA). However, there was no specific analysis of greenhouse gas emissions and global warming, nor any specific climate change mitigation strategies and actions for the mining-industrial pole. Additionally, there is no evidence that the stakeholder's discussed climate change in the e-*dialogue forum*.

5.2.3 Fishing community compensation plan

The Fishing Activity Compensation Plan (*Plano de Compensacao Pesqueira*) was developed for the Brazilian coastline north of Rio de Janeiro, by the Seismic Company CGC Veritas (HABTEC/CGG, nd). Seismic activities were undertaken to survey potential offshore areas for oil and gas exploration. During seismic activities, no fishing was allowed in the area for security reasons. This affected negatively the life style and economic activities of the fishing community situated along the coast. The Brazilian Navy and the Environmental Institute (IBAMA) issued specific licences for seismic operations in 2006 after an environmental assessment study was carried out by an independent environmental consultancy firm called *HABTEC Engenharia Sanitaria e Ambiental*. According to environmental legislation, several plans and projects were proposed by IBAMA for social-environmental protection in the area (e.g. *Environmental Education for Workers, Pollution Control Project, Emergency Action Plan, Environmental Monitoring, Social Communication Plan, and a Fishing Activity Compensation Plan*). The area involved ten municipalities as seen in Map 3.

As part of the compensation plan several public meetings were held with cooperatives, associations, fishing colonies, associated fishermen and their spouses. These meetings were organized to identify compensation actions and selection of projects to be financed by the seismic company. All selected projects were submitted for approval by IBAMA and later presented to the fishing community. Ten approved projects were developed in the municipalities (see Map 3). Between 2006 and 2007, several projects (e.g. training activities and construction of headquarters for the fishermen community) were initiated for the communities along the coast. According to HABTEC's environmental manager, the communities were satisfied with the compensation plan proposed by the seismic company.

In general terms, seismic activities and the compensation plan may not be considered a threat to climate change as they do not generate great quantities of greenhouse gases. The environmental projects discussed with local communities and approved by IBAMA will contribute to improve the environment; however, there is no evidence that these projects have approached climate change mitigation measures (e.g. energy saving and recycling of materials) and involved local stakeholders.

5.3 Description of case studies in the United Kingdom

5.3.1 Aberdeen West Peripheral Route (AWPR) project

The Aberdeen AWPR is a planned new 46-km dual carriageway proposed jointly by the Scottish Government (Transport Scotland), Aberdeen City Council and Aberdeenshire Council. The route, running to the West of Aberdeen comprises three sections: Northern Leg (Blackdog to North Kingswell), Southern Leg (North Kingswells to Charleston) and Fastlink (Cleanhill to Stoneheaven). Draft orders for the AWPR were published in September/October 2007, and statuary consultation took place in December 2005. An EIA of the AWPR Project was conducted and an environmental statement (ES) was submitted in December 2007. Map 4 shows the location of the AWPR Project.

The Scottish Government has conducted a public enquiry on the AWPR to gain opinions on the proposed project. A pre-enquiry meeting took place on May 2008 in order to

not only discuss the administrative arrangements of the enquiry but also to provide an opportunity for stakeholders to comment on the project. After the pre-enquiry, Transport Scotland issued a document that included environmental mitigation measures to address negative impacts that would arise from the project. This document was submitted to stakeholders in order to allow them to give their opinions. A public enquiry was held between September and December 2008. The enquiry was co-ordinated by the Government and conducted by two reporters appointed by the Scottish Government. The reporters will make their recommendations to the Minister who will decide on the project. The Government's report of the public enquiry will list many objections from stakeholders regarding how compensation schemes for land purchase will be accomplished. Informal interviews (see item 3 Methodology) with representatives of affected stakeholders[10] during the public enquiry affirmed that they were not satisfied with the alternative route proposed by the Scottish Transport because it was based on technical and economic criteria instead of social-environmental criteria. This made stakeholders sceptical about how the whole consultation process has been undertaken. Informal interviews with academics involved in the social participation process suggest the need for improvements in the consultation process. In the view of many people including stakeholders that objected to the development, that the decision to construct the AWPR had already been decided in principle by the Government, and because the terms of reference of the public enquiry were very limited in scope, stakeholders did not have the option to discuss more sustainable means of transport (e.g. trains or trams versus cars), nor climate change implications of a preferred alternative.

Transport projects have a direct impact on climate change because of greenhouse gas emissions from motorized vehicles that utilize fossil fuels (World Bank 1999). The AWPR EIA study prepared by a consulting firm for Transport Scotland has considered the impact of the increase of traffic and carbon emissions due to the operation of the 46-km dual carriageway proposed. The impact of the proposed new road on traffic levels and traffic congestion, pollution and carbon emissions has also been considered by the Road Sense Group that includes stakeholders from across the Aberdeen area (Road Sense 2009). Reports at the public enquiry demonstrate that several environmental and economic topics have been analysed and discussed with stakeholders but climate change has neither been one of the main topics discussed in public hearings nor is there any evidence that key stakeholders were involved greenhouse gas abatement strategies for the AWPR Project.

5.3.2 Ythan catchment project

The Ythan Project is located in the 700-km^2 catchment of River Ythan in the northeast of Scotland. The project was established to enable the local population to actively take part in the protection, restoration and enhancement of the Ythan River, to encourage development of sustainable land-use and improvement of water quality, and to increase public awareness of environmental quality and biodiversity issues. Map 5 shows the location on the Ythan catchment area.

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[10] There are around 500–1,000 stakeholders involved with the Road Sense Committee that include NGOs such as Friends of the Earth, Wonder Trust, among others. According to Transport Scotland (2008a, b), ten thousand objections were received, of which 180 were statutory (legal) objections.

According to Morris and Morris (2005), the project followed the European Commission (EC) Implementation Strategy draft guidance on achieving participation of stakeholders within the EC Water Framework Directive. A group of stakeholders was formed by 12 community councils and local government and other interested groups in the Ythan area. The partnership was established in 1997 to discuss locally significant issues and strategies for development (Morris and Morris 2005).

The Ythan catchment comprises a lowland landscape with the river source located at 280 m above sea level. Land use is significantly dominated by agriculture in 92% of the area. Part of the river has been modified by human activities. However, the river mouth is a Special Protection Area under the European Birds Directive (EC 2000; Morris and Morris 2005).

Since the early 1990s, there has been much concern about the deterioration of the water quality in the catchment area. This has generated significant impacts on bird communities in the Ythan estuary (Morris and Morris 2005). Environmental degradation has generated vigorous debate among community members concerning the river. Many different opinions as to the real causes of the pollution exist between environmental activists and farmers. Several participation methods were used including a workshop, partnership meetings and focus groups that considered how the study area could develop. Stakeholders consulted included land managers, farmers, anglers, environmentalists, local people and those with a private water supply. Frequently occurring proposals were collated and published as a potential catchment management plan in 2000. The project encouraged participation of stakeholders through educational and leisure activities *(e.g. river funs days),* volunteer work including advice given by the *Partnership Group* to farmers on government incentives (budget) and agri-environment schemes. Stakeholders formed a consortium of several organizations[11] and applied for a European Life Environmental Fund grant. The grant which was awarded enabled the development of a community-based project that involved stakeholders in the catchment management. According to Morris and Morris (2005), the project brought together various organizations to work in partnership with other organizations and with the local community. The positive response of stakeholders encouraged

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[11] The Macaulay Land Use Research Institute (MLURI) Forestry Commission for Scotland (FCS), Scottish Natural Heritage (SNH), among others.

the project's development and their continued involvement. Informal interview[12] pointed that project organizers have mainly emphasized the positive aspects of the project and not discussed the difficulties to implement it.

The project was developed because of water deterioration due to nitrate concentrations in the river due to diffuse pollution agriculture developments in the catchment area. In principle, this does not represent a threat to global warming that would imply the need for discussions with stakeholders for climate change. Although the Ythan Project has no direct implications to climate change, it is important to note that, as global warming is a very important theme for present and future generations, the Partnership Group could have also discussed with stakeholders greenhouse gas emission mitigation measures as part of environmental management strategies.

5.3.3 Trawsfynydd Nuclear Power Plant decommission project

The Trawsfynydd Nuclear Power Plant situated in North Wales, UK, is located within the Snowdonia National Park (SNPA). According to Bond et al. (2004), it began supplying electricity in 1965 and was shut down in February 1991. The defueling process was authorized by regulators and this began in 1993. The fuel rods were removed from the reactors cores and transported to BNFL in 1995. According to the Directive 97/11/EC, an environmental impact assessment (EIA) was undertaken in 1999 (Bond et al. 2004). Activities during decommissioning have been the removal of nuclear fuel from reactors and transport to a reprocessing site, removal of some buildings, reduction in height of the reactor building, refurbishment of buildings retained, construction of a safestore, retrieval of waste, packing and storage on site, and removal of asbestos, oils, gases and chemicals. The plan was developed to manage and maintain the site for a period that could extend for 135 years. After this period, the site could be released for an alternative use (Bond et al. (2004). Map 6 shows the location of Trawsfynydd Nuclear Power Plant.

The research carried out by Bond et al. (2004) examined how social participation was undertaken and compared it with an evaluation of the practice of decommissioning nuclear

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[12] The interview was carried out with a researcher from the Department of Geography and Environment, University of Aberdeen in November 2008.

power plants in Germany and Spain. Trawsfynydd in North Wales was selected because it provides a good example of how social participation has been developed in the United Kingdom regarding an industrial decommissioning project in the 1990s. Stakeholders were able to follow the different stages of the decommissioning process such as early site clearance, deferred clearance, where buildings containing radioactive plant are retained on-site in a 'safestore' and mounding and the removal of non-radioactive buildings. Consultation with stakeholders (employees, people living within a radius of 25–30 km of the plant and local authorities) was conducted initially through circulation of an information pack, a touring exhibition that visited 13 local venues and through questionnaires that were available at the touring exhibition, face-to-face meeting with workers, meetings with local councils, letters to questionnaire respondents and an exhibition in the visitor centre. Based on the public consultation, it was decided to reduce the height of the safestore.

Further social participation activities have been undertaken through the EIA of Trawsfynydd in 1999. Consultation was undertaken with a range of organizations (e.g. local authorities and many relevant NGOs) in order to allow them to express their visions on the planning applications and over the risk of radioactive leaks. According to Bond et al. (2004), the success of this process is that operators were receptive to views received and decommissioning options were altered. An important feature of the public consultation was the effective feedback given which kept the interested parties appraised of developments. This avoided any further negative reactions during the EIA process.

According to Bond et al. (2004), the EIA of Trawsfynydd can be considered to be an example of good practice recognized by the European Commission,[13] which led to general agreement between all the concerned parties and a positive response from the public.

Nuclear power plants represent to some a risky but alternative means to reduce greenhouse gasses instead of fossil-fuelled power plants (NEA, nd). Based on a documentation review, there is no evidence that climate change related to the nuclear plant decommissioning was discussed during the public consultation. This may be because there were no specific regulations to enforce 'climate change' mitigation measures at the time decommissioning was undertaken, or because during the period of the project in the 1990s, global warming was not considered such as important topic as it is today. Nevertheless, this case study is of interest because although climate change has not been addressed in participatory events, the social participation conducted can be considered effective for the decision-making process.

5.4 The analysis of social participation efficacy

According to several authors (Cleaver 2001), the efficacy of social participation in theoretical terms is to achieve better development outcomes, to empower local stakeholders and to improve the quality of life of the population. However, in practical terms, the main perspective of development is to be technically and economically efficient, and social participation process often plays a minor role (Cleaver 2001). This implies the need for a better understanding as to how the social participation process can be more effective to integrate stakeholder opinions in the decision-making process.

The choice of case studies in the United Kingdom and Brazil provides opportunity to analyse social participation approaches in different geographical areas and socio-economic

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[13] The EIS was used as the basis for a model EIS in a recent study for the European Commission which derived an EIA procedure for decommissioning nuclear power plants.

realities. This enables the comparison of different planning approaches and social partic-ipation schemes of a developed and a developing country.

Analysis of the case studies shows that the Ythan Catchment Project has been the most effective social participation process in comparison with the other case studies analysed because there has been a spontaneous self-mobilization process by the community to protect the environment. They have taken action to implement projects, and have advised organizations and developers about local development priorities. Proposals by stakeholders in participatory events have been acknowledged by the government, local farmers and developers.

The *Nuclear Power Plant Decommissioning Project* in North Wales and the *Fishing Activity Compensation Plan in Brazil* can be considered effective because in both cases the documentation analysed shows that stakeholders opinion was taken into account and recommendations implemented locally. In the *Trawsfynydd* case, it is necessary to take into account that social participation was developed in the 1990s when the concept was at an initial stage compared to the present where virtually all environmentally related projects have some form of social participation. According to Bond et al. (2004), one of the direct results of public consultation is that it led to a change of strategies regarding decommissioning.

The *Fishing Activity Compensation Plan in Brazil* can be considered effective because the documentation analysed and interviews (see item 3. Methodology) shows that stake-holders opinion was taken into account and recommendations implemented locally.

The *e-dialogue forum* and public consultation during the strategic environmental assessment (SEA) of the Mining-Industrial Plan in Brazil involved important groups and NGOs in the study. Stakeholders interacted well with each other and exchanged opinions and recommended socio-environmental actions for the plan. The *e-forum* can be con-sidered 'interactive' (see Box 2) because it allowed stakeholders to express their views on the proposed development. However, lack of information does not allow further analysis as to whether opinions and suggestions were incorporated in the final Plan and recommended actions developed. Although the e-*dialogue forum* involves several NGOs and grassroots organizations, it is only accessible for those that have access to the internet.

Based on document analysis and local surveys carried out in the region, the social participation process of the Sustainable Development Tourism Plans (PDIT) of Sergipe State has not been effective because the process did not follow the guidelines of the Government and the Inter-American Development Bank (IDB). Most non-governmental stakeholders had very little opportunity to participate and interact at public meetings and express their views and hold a dialogue with developers on the proposed developments. Participatory meetings were attended mostly by government organizations and private firms. Most local associations and NGOs were passive, having very little power to advise government/developers or to influence decision-making about how development could benefit or impact on the local community.

The AWPR social participation process has been controversial. The Scottish Govern-ment has carried out intensive consultations and conducted a public enquiry to discuss environmental impacts, mitigation and compensation measures, but a group of stakeholders (The Road Sense Group) that was interviewed considered the public enquiry 'functional' (see Box 2) because the major decisions had already been made and they did not have any power to influence Government about how development could benefit the local commu-nity. The efficacy of social participation can only be considered effective if stakeholder's views and proposals are taken into consideration in the final project.

A broad analysis has been conducted on the relation between climate change and development proposals and whether the topic was discussed during social participation events and/or whether stakeholders have been involved in greenhouse gas abatement actions. There is little or no evidence that climate change has either been discussed in social participation events nor specific projects have been implemented to support carbon-neutrality. Although development plans and projects (e.g. mining and industrial pole and tourism activities in Brazil and the dual carriage project in the United Kingdom) generate greenhouse gases, climate change strategies and actions have not been considered during public enquiries, local consultations or participatory planning events.

6 Carbon-neutral social participation model

According to Bond et al. (2004), the political, social and economic context of each country determines the efficacy of participatory practices and there is no universal model that will serve all social participation events. As discussed earlier in this paper, it is considered necessary to apply certain principles to achieve effective participation (see Box 3). Nevertheless, in today's world, climate change strategies should be part of every development proposal and social participation scheme because it is a crucial theme for the future of the planet. However, the case studies reveal that climate change strategies have rarely been considered in the social participation process.

The 'social-carbon' projects described earlier provide good examples of how local stakeholders can get involved in climate change mitigation actions. A *carbon-neutral committee* responsible for coordinating climate change mitigation measures within socio-economic development plans, programmes and projects is therefore proposed. The *carbon-neutral committee* should be integrated in the social participation process as exemplified in the scheme below (Fig. 1).

The aforementioned scheme indicates how a *carbon neutral committee* could fit in the social participation process of development plans, programmes and projects. A general description of each part of the scheme is presented below.

6.1 Part I: Public consultation, participatory planning and climate change strategies

A developer (whether public or private) introduces a development proposal, including conducting environmental studies and indicating how they propose social participation be incorporated in the planning process. Public consultation and enquiries, interviews and participatory planning with stakeholders in different levels and sectors of society (see Box 1) provides an opportunity to enquire about the proposed development, the major environmental impacts and its relation to climate change. Developers at this stage should not only incorporate stakeholder's suggestions into the planning process but also indicate how stakeholders can participate in carbon-neutral actions.

6.2 Part II: Carbon neutral committee

Stakeholders form a deliberative committee to monitor planning activities and make sure proposals are incorporated into the final planning document, ensuring that carbon-neutral actions are planned according to environmental legislation and international standards such as the Kyoto Protocol and most recent directives from the UN Conference on Climate Change in Bali, Indonesia in 2007. The *carbon-neutral committee* should be formally
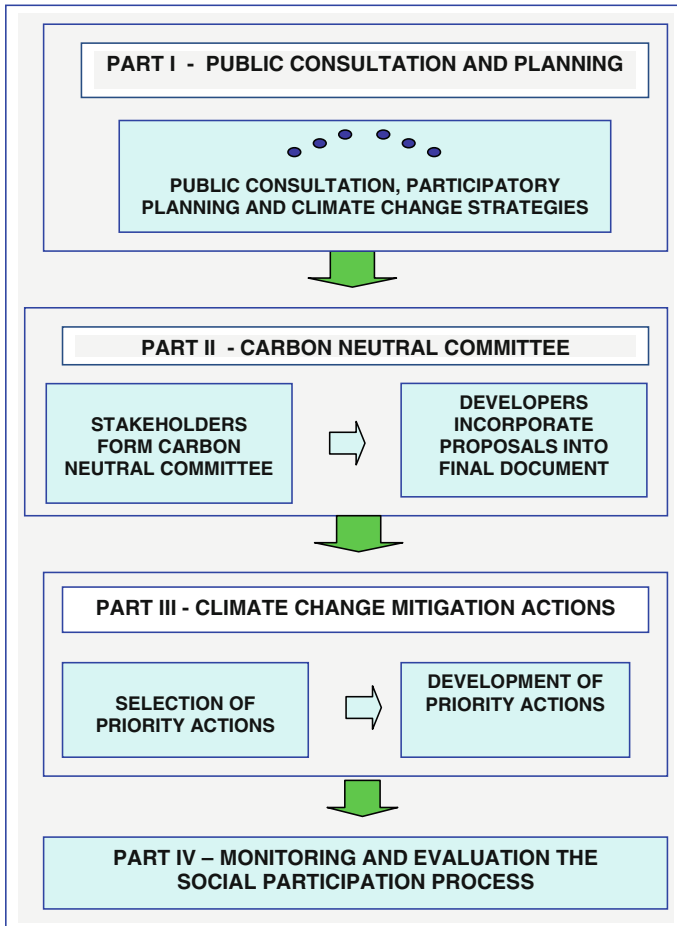
Fig. 1 Carbon-neutral social participation scheme

recognized by government authorities and should meet on a regular basis with developers to discuss development actions.

6.3 Part III: Climate change mitigation actions

Priority socio-environmental actions and climate change mitigation measures planned in the previous phases should be implemented to guarantee carbon neutrality of development proposals. Actions should also be monitored, evaluated and re-planned with the participation of stakeholders represented on the *carbon-neutral committee*. This will be done to adjust short-term tactics and long-term strategies.

6.4 Part IV: Monitoring and evaluation of the social participation process

The consolidation of an effective carbon-neutral social participation process will be based on the experience of joint work between developers (government or private enterprise), the

carbon-neutral committee and local stakeholders. Monitoring and evaluation should be developed during the entire lifecycle of development in order to see there are no conflicts and if actions planned in the previous phases have effectively been incorporated in the decision-making process.

7 Conclusions and recommendations

This topic presents the overall concluding results of the study followed by recommendations for further research in the area of social participation and climate change.

From a preliminary perspective, it is possible to conclude that social participation has developed in many different forms and adopted many different approaches. The case studies indicate that it has varied in its effectiveness, some being more effective than others. It is possible to conclude that social participation in the United Kingdom is systematic and stakeholders are in general well organized and socially engaged through local groups and NGOs. This has encouraged better understanding of their rights and how they want development to be undertaken. The case studies in the United Kingdom demonstrate that stakeholders are always actively involved in social participation schemes, providing opinions and protesting when necessary to try to ensure that their opinions are taken into account. Education, self-organization and knowledge of civil rights can be considered core elements if local stakeholders are to be more effective in the social participation process. The *Nuclear Power Plant Decommissioning Project* in North Wales can be considered a good reference of social participation scheme developed in the 1990s because it led to a change of strategies regarding decommissioning.

The analysis of the Brazilian case studies demonstrates that Government plans and programmes that cover regional areas and that affect vulnerable stakeholders tend to be very 'passive' (see Box 2) such as the case of PRODETUR NEII/PDIT Sergipe. Stakeholders in such regions are not able to express their opinions properly because they are not well educated or acquainted with their citizen's rights. The government also does not make sufficient investment in involving communities because this would mean more effort on something that will not change development actions once major decisions have already been made at the top government level. Although there are several NGOs in Brazil that pressure government to involve local stakeholders in the decision making process, they are generally outnumbered and lack resources to influence major developments proposed by the government. Private initiatives such as the Pantanal Mining-Industrial Pole and the fishermen community compensation plan from CCG Veritas tend to be more effective and 'interactive' (see Box 2) because developers have an interest in creating a positive image among government authorities and the general public. These two cases involved stakeholders as part of the development process, but there is no evidence that stakeholders were able to change the original development plan.

In most cases analysed in Brazil and the United Kingdom, it would appear that very little can be done by stakeholders to change big decisions on development policies that support public and private development plans, programs and projects because it is a top-down established decision-making process. Involving stakeholders in social participation schemes has been a way to encourage dialogue and avoid conflict. In reality, it often only provides an opportunity for discussion and agreement on specific issues (e.g. training local people, planting trees, improving sanitation). In many cases, social participation is seen only as a means for the government (or private developers) to establish a communication

link with stakeholders regarding how development will be undertaken and how they will be affected.

The Ythan Project seems to be the most effective social participation case study because local stakeholders spontaneously 'self-mobilized' (see Box 2) in order to solve environmental problems in the catchment area. This has enabled the Government to finance and co-ordinate local actions with the participation of stakeholders.

Although the global climate change and the emission of greenhouse gases have a direct relation with human development activities it appears that carbon neutrality is not taken seriously by the two Governments, the private sector, or by the population in general. Climate change and development plans, programmes and projects seem to be something separate and not related to each other; otherwise it would be discussed more in most social participation events. This has been called by Mai et al. (2006) the 'global social deficit for climate change'. It is possible to conclude that some of the development activities analysed in this study will emit greenhouse gases, but there is little evidence that climate change mitigation actions involving stakeholders have been integrated into development strategies. The Pantanal Mining-Industrial Pole in Brazil is a good example because although there will be greenhouse gas emissions, according to the SEA study, there is no evidence that stakeholders were involved in climate change mitigation measures. The same is true for the AWPR Project in Scotland and the PRODETUR NE II/PDITS tourism development in Brazil. As this theme is so important for present and future generations, climate change mitigation measures should to be part of every development proposal.

In the light of the preliminary evidence presented, it will be necessary to carry out a comprehensive analysis to gain a better understanding of how development plans, programmes and projects can integrate stakeholders in climate change mitigation measures as part of the social participation process. The carbon-neutral model proposed within the social participation process is an attempt to develop a participatory instrument to fill this gap.

7.1 Recommendations

Based on the research conclusions, several recommendations can be made to assist the inclusion of climate change issues in social participation schemes.

It could be considered as an initial indicative analysis which attempts to provide knowledge to see if social participation has improved the decision making process. As climate change is also an important topic for present and future generations, this study also attempts to investigate if climate change mitigation strategies have been integrated into social participation schemes.

Being this study an initial indicative analysis to see if social participation has improved the decision making process, it is recommended further research with local stakeholders from the case studies analysed, in order to understand how social participation schemes could be more efficient. It is also recommended more investigation on new mechanisms of social participation schemes that supports the reduction of greenhouse gasses linked to development proposals. Academic institutions sponsored by the international organizations, the private initiatives and the government should develop investigations on innovative projects and new mechanisms of social participation.

Development plans and programme such as the PRODETUR NE II/PDTIS should consider more effective ways to include stakeholders in the decision-making process. Government authorities should implement a specific resolution from the National Environmental Council (CONAMA) to legalize 'stakeholders committees' in order to guarantee

that the opinions and suggestions of stakeholders are taken into account in the decision-making process, to increase communication and to incentive effective public participation in all levels of society. Additionally, a scheme should be implemented to monitor the implementation of stakeholder's proposed actions and how effective is their participation in climate change mitigation measures. This would also apply to private plans, programmes and projects such as the Pantanal Mining and Industrial Pole Plan.

Social participation activities should focus on engaging participants and encourage them to learn and interact (Morris and Morris 2005). This is a fundamental strategy in order to include more stakeholders in the social participation process and has worked well not only through formal participatory approaches but also through creative schemes such as leisure activities involving local stakeholders in the Ythan Project.

The SEA of Pantanal Mining-Industrial Pole was innovative because it created the *e-dialogue forum* for stakeholders to exchange opinions and to provide feed-back to developers. This Internet forum could be part of every development plan, programmes and project proposal. The Government could also develop schemes to encourage social participation and link job creation strategies that will benefit local stakeholders.

According to the Amazon Environmental Research Institute (IPAM) and the Climate Observatory (OC), it is necessary to evaluate the sustainability of development plans and projects based on strict criteria before final financial and technical decisions are made (Coelho et al. 2006). A set of indicators can be used to evaluate project/plan development proposals based the Kyoto Protocol standards utilizing instruments such as on energy environment reviews (EERs).

It is also recommended that a *climate change impact assessment (CCIA)* methodology for development plans, programmes and projects could be developed in order to identify not only the impacts of greenhouse gas emissions, but also priority actions to mitigate the impacts. It will be necessary to develop methods and tools to evaluate greenhouse gas emissions related to developments proposed and establish actions to reduce emissions during operations.

Last but not least, it is recommended that strategies and mechanisms be developed to facilitate the formation of stakeholder's *carbon-neutral committees* which would involve local stakeholders in greenhouse gas abatement actions as part of all development plans, programmes and project proposals.

References

Alencar, E. (1994). *Diagnóstico Participativo como Instrumento Auxiliar na Gestão de Associações de Agricultores Familiares e Agência de Desenvolvimento (Participatory Diagnosis as an Instrument to*

Support Associations of Family Agriculture and International Agency Management). Unpublished manuscript, Rio de Janeiro.

Allen, W., & Kilvington, M. (2002). *Sustainable development extension.* MAF technical paper no: 2002/03 prepared for MAF policy, Landcare Research Chris Nixon & John Yeabsley NZIER, February 2002.

Almeida, J. R. (2008). *Ciências Ambientais.* Thex Editora—Almeida Cabral.

Altram. (2008). *Reducing CO2 levels in the atmosphere, our technological challenge.* Altram Foundation for Innovation 2007 Award.

Aschemann, R. (2002). *Pros and Cons of the European Community Strategic Environmental Assessment—SEA directive. International association for impact assessment—IAIA 22nd annual conference event—abstract of volumes*, Netherland Congress Center, The Hague, pp. 9.

Avaaz. (nd). Climate change and European leadership sinks. Avaaz—world in action. http://www.avaaz.org/po/europe_climate_crunch_time/98.php?cl_tf_sign=1.

BBC. (2007). Heathrow protester set up camp. www.news.bbc.co.uk/1/hi/uk/6943084.stm.

Blackstock, K. L., Richards, C., Kirk, E. A., & Chang, Y. C., & Davidson, G. (nd). *Participation and regulation: Where two worlds collide?*

Bell, S., & Morse, S. (2003). *Measuring sustainability.* London: Earthscan Publications Limited.

Blackstock, K. L. (2007). *Enabling or extractive? Collaborative evaluation of partnership working in Scotland.* European Society for Rural Sociology Conference August 20–24, 2007. Working group three: Accounting for change: Evaluation and integrated development in the project state.

Bond, A., Palerm, J., & Haigh, P. (2004). Public participation in EIA of nuclear power plant decommissioning projects: A case study analysis. *Environmental Impact Assessment Review, 24*(2004), 617–641.

Braun, R. (2005a). Avaliação da Participação Social na Elaboração dos Plano de Desenvolvimento Sustentável (PDIT) do Pólo Costa Norte de Turismo (CNT), Ceará, Piauí, Maranhão. (*Evaluation of social participation process of the sustainable tourism development plan of the states of Ceara, Piaui,and Maranhao.*) Relatório de Avaliação Ambiental Programmeática (AAP): Participação Social e. PRODETUR NE II, MTUR/BID/PNUD, 2005.

Braun, R. (2005b). Avaliação de Ecossistemas e Recursos Naturais e Avaliação da Participação Social na elaboração do Plano de Desenvolvimento Sustentável (PDIT) Pólo Costa dos Corais, Alagoas. (*Evaluation of the social participation process and ecosystem and natural resources evaluation of the sustainable tourism plan of Alagoas State*.) Relatório de Avaliação Ambiental Programmeática (AAP): Participação Social e. PRODETUR NE II, MTUR/BID/PNUD, 2005.

Braun, R. (2005c). Avaliação de Ecossistemas e Recursos Naturais e a Avaliação da Participação Social na elaboração do Desenvolvimento Sustentável (PDIT) Pólo Costa das Dunas, Rio Grande do Norte. (*Evaluation of the social participation process and ecosystem and natural resources evaluation of the sustainable tourism plan of Rio Grande do Norte State.*) Relatório de Avaliação Ambiental Programmeática (AAP): Participação Social. PRODETUR NE II, MTUR/BID/PNUD, 2005.

Braun, R. (2005d). Avaliação de Ecossistemas e Recursos Naturais e a Avaliação da Participação Social na Elaboração do Plano de Desenvolvimento Sustentável (PDIT) Pólo Costa dos Coqueiros, Sergipe. (*Evaluation of the social participation process and ecosystem and natural resources evaluation of the sustainable tourism plan of Sergipe State*), Sergipe. Relatório de Avaliação Ambiental Programática (AAP): Participação Social. PRODETUR NE II, MTUR/BID/PNUD, 2005.

Braun, R. (2006). *Sustainability at the local level: Management tools and municipal tax incentive model, environment, development and sustainability.* Springer, The Netherlands, ISSN: 1387-585X (Paper) 1573-2975 (Online) 5, Issue 2006: Online first, 2006a.

Braun, R. (2009). *Sustainable development incentives—green incentives, social motivation, strategic environmental assessment and corporate management.* Germany: VDM Verlag Dr. Müller.

Brown, C. (2008). Green cabs. http://www.climateneutral.unep.org/cnn_members.aspx?m=322.

Clark, B. D. (1999). *Sustainable development: Key concepts and the Post-Rio Agenda.* CORDAH.

Cleaver, F. (2001). *Institutions, agency and limitations of participatory approaches to development.* In B. Cooke & U. Kothari (Eds.), *Participation—the new tyranny.* Zed Books.

Coelho, M. C. C., Aquino, A. R., & Almeida, J. R. (2006). *Desenvolvimento Sustentável e o Protocolo de Quioto.* Revista Brasileira de Pesquisa e Desenvolvimento, Vol. 8, n° 2, Agosto de 2006.

CONAMA. (1986). Resolução CONAMA sobre Avaliação de Impacto Ambiental N° 237, de 19 de dezembro de 1997 (CONAMA Resolution on EIA) 001/86 and 237/97), Conselho Nacional do Meio Ambiente, Brasiliam 1986.

CONAMA. (1997). Resolução CONAMA N° 237, de 19 de dezembro de 1997 (CONAMA Resolution on Environmental Licensing) 001/86 and 237/97), Conselho Nacional do Meio Ambiente, Brasiliam 1997.

Dalal-Clayton, B., & Bass, S. (2002). *Sustainable development strategies: A resource book.* UK/USA: OECD, UNDP, Earthscan Publications Ltd.

EC. (2000). *Directive establishing a framework for community action in the field of water policy* (2000/60/EC, Commission of the European Communities (Brussels: Official Journal L327, 2000).

Estrella, M. (2000). *Tracing the history of participatory monitoring and evaluation.* Institute of Development Studies/The Participation Group, www.ids.ac.uk.

Farias, A. (2008). VIII Reunión BID Sociedad Civil (8th Interamerican Development Bank Meeting).

Fischer, T. B. (2007). *Theory and practise of strategic environmental assessment—towards a Mores systematic approach.* London: Earthscan.

Flora, C. B., Gasteyer, S., Fernandez-Baca, E., Banerji, D., Bastian, S., & Aleman, S. (2000). *Local participation in research & extension for conservation & development of natural resources: A summary of approaches.* Paper presented at the sixteenth meeting of the International Farming Systems Association, Santiago, Chile, November 30, 2000.

Franca, L. P. (1998). *Processo de Gestão do Desenvolvimento: Proposta Metodológica de Sistematização das Informações para o Planejamento Participativo.* (*Management of process development: Methodological proposal to systemize information for participatory planning, Doctoral Thesis.*) Federal University of Rio de Janeiro-UFRJ/Centre for Energetic Programme.

Francis, P. (2001). *Participatory development at the World Bank—the primacy process.* In B. Cooke & U. Kothari (Ed.), *Participation—the new tyranny.* Zed Books.

Freudenberger, K. S. (1994). *Tree and land tenure rapid appraisal tools.* Rome: Food and Agriculture Organization of the United Nations.

Gardner, G. T., & Stern, P. C. (2002). *Environmental Problems and Human Behavior* (2nd ed.). Boston, MA: Pearson Custom Publishing.

Gola, S. (2008). Incentive sol—incentive sol Soluções Solidárias Ltda. http://www.climateneutral.unep.org/cnn_members.aspx?m=192.

GTZ. (1997). *ZOPP objectives-oriented project planning—a planning guide for new and ongoing projects and programme.* Deutsche Gesellschaft für Technische Zuzamenarbeit-GTZ GmbH Unit 04, Eschborn.

Hailet, J. (2001). Beyond the formulatic: Process and practice in South Asian NGOs. In B. Cooke & U. Kothari (Ed.), *Participation—the new tyranny.* Zed Books.

HABTEC/CGG. (nd). Social participation brochure. Seismic Company CGC Veritas.

IPCC. (2001). The third assessment report of the intergovernmental panel on climate change.

Kitchin, R., & Tate, N. J. (2000). *Conducting research into human geography—theory, methodology and practice.* Edinburgh: Prentice Hall, Pearson Education limited.

Kranz, P. (1999). *Pequeno Guia da Agenda 21 Local (Small guide for the local agenda 21).* Rio de Janeiro: Secretaria Municipal de Meio Ambiente.

LIMA/COPPE. (2008). *Avaliação Ambiental Estratégica do Pólo Mínero-Industrial de Corumbá e Influências sobre a Planície Pantaneira.* (*SEA of Pantanal* (Mining-industrial development plan and influences on the Panatanal), Laboratorio Inter-disciplinar de Meio Ambiente (LIMA/COPPE/UFRJ), Rio de Janeiro, 2008.

Mai, L. A., Guimarães A. L., Aquino, A. R., & Almeida, J. R. (2006). *Mudanças Climáticas Globais e Problemas Sociais: A Relação com o Consumismo.* Revista Brasileira de Pesquisa e Desenvolvmento, Vol. 8, n° 2, Agosto de 2006.

McDaniels, T. L., Gregory, R. S., & Felds, D. (1999). Democratizing risk management: Successful public involvement in local water management decisions. *Risk Analysis, 19*(3), 497–510.

Montevideo—Uruguay 7 e 18 de octubre de 2008 Evaluación Ambiental Estratégica., Caso Corumbá/Pantanal.

Moreira, I. V. (1994). EIA in Latin America. In P. Wathern (Ed.), *Environmental impact assessment—theory and practice.* London: Routledge.

Morris, C. T., & Morris, R. M. (2005). The Ythan project: A case study on improving catchment management trough. *Community Involvement, 48*(3), 413–429.

MTUR. (2005). Plano Nacional de Turismo—Diretrizes, Metas e Programmeas (National Tourism Plan), Ministerio do Turismo (MTUR), Brasilia, DF.

NAE—SECOM. (2005). *Mudança do Clima*—Vol. I—Vulnerabilidade, Impactos e Adaptação 'a Mudança do Clima Negociações Internacionais sobre a Mudança do Clima—Cadernos NAE Núcleo de Assuntos Estratégicos da Presidência da República. Numeo 3/2005.

Ng, T. L. (2002). *Engaging and enabling the public to participate in strategic environmental assessment.* Conference on restoring environmental assessment tools for sustainability, Environmental Protection Department the Government of the Hong Kong Special Administrative Region, The Chinese University of Hong Kong, December 8–13, 2002.

NRDC. (2006). *Footloose and carbon-free.* This green life. Natural Resources Defense Council (NDRC). (www.ndrc.org/thisgreenlife/).

NEA. (nd). *Nuclear power and climate change.* Nuclear Energy Agency (NEA), OECD.

ODPM. (2005). *Sustainability appraisal of regional spatial strategies and local development documents—guidance for regional planning bodies and local planning authorities*. London: Office of the Deputy Prime Minister (ODPM).

OECD. (2006). *Applying strategic environmental assessment—good practise guidance for development co-operation*. DAC guidelines and reference series. Organization for Economic Co-operation and Development (OECD).

Partidário, M. R. (1998). Perspectivas Futuras: A emergência da avaliação ambiental estratégica. (*Future perspectives: The emergency of strategic environmental assessment*). *Avaliação de Impacto Ambiental, Documentos Ambientais, Secretaria de Meio Ambiente de São Paulo*, (A963):69–84.

Pfeiffer, P. (2000). *Planejamento Estratégico Municipal (PEM), Uma Nova Abordagem para o Desenvolvimento Local (Municipal Strategic Planning, a New Way for the Local Development)*. Unpublished manuscript, Brazilian Institute for Municipal Administration-IBAM, Rio de Janeiro.

Pretty, J. N., Guijt, I., Thompson, J., & Scoones, I. (1997). *A trainer's guide for participatory learning and action*. London: IIED.

Pretty, J., & Hine, R. (1999). *Community participation—participatory appraisal for community assessment: Principles and methods*. http://www.essex.ac.uk/ces/esu/cmmunity-participatory-shtm.

Road Sense. (2009). *Aberdeen bypass campaigners lodge written closing submission with public local inquiry*. Press release for immediate use. January 14, 2009. www.road-sense.org.

Ryan, D. (2008). *The carbon association Australasia*. http://www.climateneutral.unep.org/cnn_members.aspx?m=389.

Stern, B. (2006). *The Stern review*—the economics of climate, her majesty treasury.

Thomas, R. (2008). Footprint adventures. http://www.climateneutral.unep.org/cnn_members.aspx?m=248.

Transport Scotland. (2008a). Aberdeen Western Peripheral Route (AWPR) public local inquiry—indicative programmeme. Public Local Inquiry home page: http://awpr-pli.net/.

Transport Scotland. (2008b). *Public local inquiry into draft schemes and orders for the Aberdeen Western Peripheral Route*—note of matters agreed at or arising from pre-inquiry meeting on May 13, 2008.

UNEP. (1997). Changing the in-vironment. *United Nations Environmental Programme Our Planet, 8*(2), 16–18.

UNEP. (2007). *GEO report global environmental outlook (GEO 4)*. United Nations Environmental Programme UNEP's Publications Department.

UNEP. (2008). *Climate neutral network*. United Nations Environmental Programmeme (UNEP). Climate Neutral CNNet. http://www.climateneutral.unep.org/cnn_contentlist.aspx?m=53.

UNFCCC. (2008). *United Nations climate change conference* held in Poznan, Poland. http://unfccc.int/meetings/cop_14/items/4481.php.

World Bank. (1999). *Public consultation in the environmental assessment process: A strategic approach*. Environmental Assessment Sourcebook Update. No. 26, May 1999.

World Bank. (2005). *Integrating environmental considerations in policy forumulation—lessons from policy-based SEA experience*. Report no. 32783, Environmental Department, Washington, DC.

Zero Hora. (2005). *Como Contribuir Localmente com a Redução do Aquecimento Global. (How to contribute with climate change mitigation measures locally)*. Jornal Zero Hora de Porto Alegre, Janeiro de 2005.